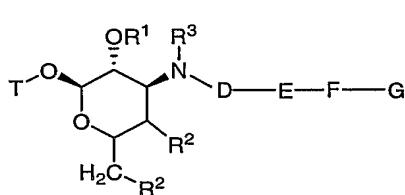


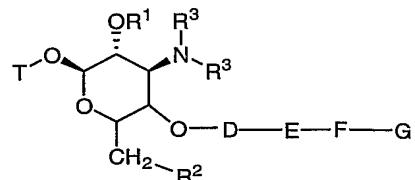
CLAIMS

1 What is claimed is:

1 1. A compound having the formula:



I



or

II

2 or a pharmaceutically acceptable salt, ester, N-oxide, or prodrug thereof,

3 wherein

4 T is a 14-, 15-, or 16-membered macrolide connected via a macrocyclic ring carbon atom;

5 R¹ and R³ independently are selected from the group consisting of: (a) H, (b) a

6 C₁₋₆ alkyl group, (c) a C₂₋₆ alkenyl group, (d) a C₂₋₆ alkynyl group, (e) -C(O)R⁵,

7 (f) -C(O)OR⁵, (g) -C(O)-NR⁴R⁴R⁴, (h) -C(S)R⁵, (i) -C(S)OR⁵, (j) -C(O)SR⁵, or (k) -C(S)-

8 NR⁴R⁴R⁴;

9 R² is hydrogen or -OR¹²;

10 D is selected from the group consisting of:

11 (a) a single bond, (b) a C₁₋₆ alkyl group, (c) a C₂₋₆ alkenyl group; (d) a C₂₋₆ alkynyl group; (e) -C(O)-X-, (f) -C(O)O-X-, (g) -C(O)NR⁴R⁴-X-, (h) -C(=NR⁴)-X-, (i) -C(=NR⁴)O-X-, (j) -C(=NR⁴)N-X-, (k) -SO₂-X-, (l) -C(NR⁴)NR⁴-X-, (m) -C(S)-X-, (n) -C(S)NR⁴-X-, (o) -C(NR⁴)S-X-, or (p) -C(O)S-X-, wherein

12 i) 0-2 carbon atoms in any of (b)-(d) of D immediately above
13 optionally is replaced by a moiety selected from the group
14 consisting of O, S(O)_p, and NR⁴,

15 ii) each of the groups (b)-(d) immediately above optionally is
16 substituted with one or more R⁵ groups,

17 iii) alternatively when R⁵ is present as an optional substituent on (b)-
18 (d), R³ and R⁵ can be taken together with the atoms to which they
19 are attached to form a 3-7 membered ring, and

- 298 -

iv) X is selected from the group consisting of (aa) a C₁₋₆ alkyl group,
(bb) a C₂₋₆ alkenyl group, or (cc) a C₂₋₆ alkynyl group, wherein
each of groups (aa)–(cc) optionally is substituted with one or more
R⁵ groups;

29 F is selected from the group consisting of:

(a) a single bond, (b) a C₁₋₆ alkyl group, (c) a C₂₋₆ alkenyl group, (d) a C₂₋₆ alkynyl group, wherein

39 E is selected from the group consisting of:

40 (a) a 3-10 membered saturated, unsaturated, or aromatic heterocycle containing
41 one or more heteroatoms selected from the group consisting of nitrogen, oxygen,
42 and sulfur,
43 (b) a 3-10 membered saturated, unsaturated, or aromatic carbocycle,
44 (c) a $-W-[3\text{-}10 \text{ membered saturated, unsaturated, or aromatic heterocycle}]$
45 containing one or more heteroatoms selected from the group consisting of
46 nitrogen, oxygen, and sulfur],
47 (d) a $-W-[3\text{-}10 \text{ membered saturated, unsaturated, or aromatic carbocycle}]$,
48 (e) $-C(O)-$, (f) $-C(O)O-$, (g) $-C(O)NR^4-$, (h) $-C(=NR^4)-$,
49 (i) $-C(=NR^4)O-$, (j) $-C(=NR^4)NR^4-$, (k) $-OC(O)-$, (l) $-OC(O)O-$,
50 (m) $-OC(O)NR^4-$, (n) $-NR^4C(O)-$, (o) $-NR^4C(O)O-$,
51 (p) $-NR^4C(O)NR^4-$, (q) $-NR^4C(=NR^4)NR^4-$, (r) $-S(O)_p-$,
52 (s) $-NR^4S(O)_2-$, (t) $-S(O)_2NR^4-$, (u) $-C(N-OR^4)-$, (v) $-CH_2-$,
53 (w) $-C(N-NR^4R^4)-$, (x) $-C(S)NR^4-$, (y) $-NR^4C(S)-$, (z) $-C(S)O-$, or
54 (aa) $-OC(S)-$, wherein
55 i) any of (a)-(d) immediately above optionally is substituted with one
56 or more R^5 groups; and

57 ii) W is selected from the group consisting of:
58 (aa) $-OCO-$, (bb) $-OC(O)O-$, (cc) $-OC(O)NR^4-$,
59 (dd) $-NR^4C(O)O-$, (ee) $-OCNOR^4-$,
60 (ff) $-NR^4-C(O)O-$, (gg) $-C(S)(NR^4)-$, (hh) $-NR^4-$,
61 (ii) $-OC(S)O-$, (jj) $-OC(S)NR^4-$, (kk) $-NR^4C(S)O-$, (ll) $-$
62 $OC(S)NOR^4-$, (mm) $-C(S)O-$, (nn) $-OC(S)-$, (oo) $-C(O)-$, (pp) $-$
63 $C(O)O-$, (qq) $-C(O)NR^4-$, (rr) $-C(=NR^4)-$,
64 (ss) $-C(=NR^4)O-$, (tt) $-C(=NR^4)NR^4-$, (uu) $-OC(O)-$, (vv) $-$
65 $OC(O)O-$, (ww) $-OC(O)NR^4-$, (xx) $-NR^4C(O)-$, (yy) $-$
66 $NR^4C(O)O-$, (zz) $-NR^4C(O)NR^4-$, (aaa) $-NR^4C(=NR^4)NR^4-$,
67 (bbb) $-S(O)_p-$, (ccc) $-NR^4S(O)_2-$, (ddd) $-S(O)_2NR^4-$, (eee) $-C(N-$
68 $OR^4)-$, (fff) $-C(N-NR^4R^4)-$, (ggg) $-C(S)NR^4-$, or (hhh) $-$
69 $NR^4C(S)-$;

70 G is selected from the group consisting of: (a) B' and (b) B'-Z-B'', wherein

71 i) each B' and B'' is independently selected from the group consisting
72 of (aa) an aryl group, (bb) a heteroaryl group, (cc) a biaryl group,
73 (dd) a fused bicyclic or tricyclic saturated, unsaturated or aromatic
74 ring system optionally containing one or more heteroatoms
75 selected from the group consisting of nitrogen, oxygen, and sulfur,
76 (ee) a 3-10 membered saturated or unsaturated heterocycle
77 containing one or more heteroatoms selected from the group
78 consisting of nitrogen, oxygen, and sulfur, (ff) a 3-10 membered
79 saturated, or unsaturated carbocycle, wherein each (aa)-(ff)
80 optionally is substituted with one or more R¹¹ groups; and
81 ii) Z is selected from the group consisting of
82 (aa) a single bond, (bb) a C₁₋₂ alkyl group, (cc) a C₂ alkenyl group,
83 (dd) a C₂ alkynyl group, (ee) $-C(O)-$, (ff) $-C(O)O-$, (gg) $-$
84 $C(O)NR^4-$, (hh) $-C(=NR^4)-$, (ii) $-C(=NR^4)O-$, (jj) $-C(=NR^4)NR^4-$
85 , (kk) $-S(O)_p-$, (ll) $-OC(O)-$, (mm) $-C(S)-$, (nn) $-C(S)NR^4-$, (oo)
86 $-C(NR^4)S-$, (pp) $-C(O)S-$, (qq) $-O-$, (rr) $-NR^4-$, (ss) $-NR^4C(O)-$,
87 (tt) $-OC(NR^4)-$, (uu) $-NC(NR^4)-$, (vv) $-C(S)O-$, (ww) $-SC(O)-$,
88 or (xx) $-OC(S)-$;

- 300 -

89 R⁴, at each occurrence, independently is selected from the group consisting of:
90 (a) H, (b) a C₁₋₆ alkyl group, (c) a C₂₋₆ alkenyl group, (d) a C₂₋₆ alkynyl group, (e)
91 a C₆₋₁₀ saturated, unsaturated, or aromatic carbocycle, (f) a 3-12 membered
92 saturated, unsaturated, or aromatic heterocycle containing one or more
93 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
94 (g) -C(O)-C₁₋₆ alkyl, (h) -C(O)-C₂₋₆ alkenyl, (i) -C(O)-C₂₋₆ alkynyl, (j) -C(O)-
95 C₆₋₁₀ saturated, unsaturated, or aromatic carbocycle, (k) -C(O)-3-12 membered
96 saturated, unsaturated, or aromatic heterocycle containing one or more
97 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
98 (l) -C(O)O-C₁₋₆ alkyl, (m) -C(O)O-C₂₋₆ alkenyl, (n) -C(O)O-C₂₋₆ alkynyl,
99 (o) -C(O)O-C₆₋₁₀ saturated, unsaturated, or aromatic carbocycle, p) -C(O)O-3-12
100 membered saturated, unsaturated, or aromatic heterocycle containing one or more
101 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
102 and q) -C(O)NR⁶R⁶,

103 wherein any of (b)-(p) optionally is substituted with one or more R⁵
104 groups,

105 alternatively, NR⁴R⁴ forms a 3-7 membered saturated, unsaturated or aromatic ring
106 including the nitrogen atom to which the R⁴ groups are bonded, wherein said ring is optionally
107 substituted at a position other than the nitrogen atom to which the R⁴ groups are bonded, with
108 one or more moieties selected from the group consisting of O, S(O)_p, N, and NR⁸;

109 R⁵ is selected from the group consisting of:

110 (a) R⁷, (b) a C₁₋₈ alkyl group, (c) a C₂₋₈ alkenyl group, (d) a C₂₋₈ alkynyl group, (e)
111 a C₃₋₁₂ saturated, unsaturated, or aromatic carbocycle, and (f) a 3-12 membered
112 saturated, unsaturated, or aromatic heterocycle containing one or more
113 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, or
114 two R⁵ groups, when present on the same carbon atom can be taken together with
115 the carbon atom to which they are attached to form a spiro 3-6 membered
116 carbocyclic ring or heterocyclic ring containing one or more heteroatoms selected
117 from the group consisting of nitrogen, oxygen, and sulfur;

118 wherein any of (b)-(f) immediately above optionally is substituted with
119 one or more R⁷ groups;

120 R⁶, at each occurrence, independently is selected from the group consisting of:

- 301 -

121 (a) H, (b) a C₁₋₆ alkyl group, (c) a C₂₋₆ alkenyl group, (d) a C₂₋₆ alkynyl group, (e)
122 a C₃₋₁₀ saturated, unsaturated, or aromatic carbocycle, and (f) a 3-10 membered
123 saturated, unsaturated, or aromatic heterocycle containing one or more
124 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
125 wherein any of (b)-(f) optionally is substituted with one or more moieties
126 selected from the group consisting of:

127 (aa) a carbonyl group, (bb) a formyl group, (cc) F, (dd) Cl, (ee) Br,
128 (ff) I, (gg) CN, (hh) NO₂, (ii) -OR⁸,
129 (jj) -S(O)_pR⁸, (kk) -C(O)R⁸, (ll) -C(O)OR⁸,
130 (mm) -OC(O)R⁸, (nn) -C(O)NR⁸R⁸,
131 (o) -OC(O)NR⁸R⁸, (pp) -C(=NR⁸)R⁸,
132 (qq) -C(R⁸)(R⁸)OR⁸, (rr) -C(R⁸)₂OC(O)R⁸,
133 (ss) -C(R⁸)(OR⁸)(CH₂)NR⁸R⁸, (tt) -NR⁸R⁸,
134 (uu) -NR⁸OR⁸, (vv) -NR⁸C(O)R⁸,
135 (ww) -NR⁸C(O)OR⁸, (xx) -NR⁸C(O)NR⁸R⁸,
136 (yy) -NR⁸S(O)_rR⁸, (zz) -C(OR⁸)(OR⁸)R⁸,
137 (ab) -C(R⁸)₂NR⁸R⁸, (ac) =NR⁸,
138 (ad) -C(S)NR⁸R⁸, (ae) -NR⁸C(S)R⁸,
139 (af) -OC(S)NR⁸R⁸, (ag) -NR⁸C(S)OR⁸,
140 (ah) -NR⁸C(S)NR⁸R⁸, (ai) -SC(O)R⁸,
141 (aij) a C₁₋₈ alkyl group, (ak) a C₂₋₈ alkenyl group, (al) a C₂₋₈ alkynyl
142 group, (am) a C₁₋₈ alkoxy group, (an) a C₁₋₈ alkylthio group, (ao) a
143 C₁₋₈ acyl group, (ap) -CF₃,
144 (aq) -SCF₃, (ar) a C₃₋₁₀ saturated, unsaturated, or aromatic
145 carbocycle, and (as) a 3-10 membered saturated, unsaturated, or
146 aromatic heterocycle containing one or more heteroatoms selected
147 from the group consisting of nitrogen, oxygen, and sulfur,
148 alternatively, NR⁶R⁶ forms a 3-10 membered saturated, unsaturated or aromatic ring
149 including the nitrogen atom to which the R⁶ groups are attached wherein said ring is optionally
150 substituted at a position other than the nitrogen atom to which the R⁶ groups are bonded, with
151 one or more moieties selected from the group consisting of O, S(O)_p, N, and NR⁸;
152 alternatively, CR⁶R⁶ forms a carbonyl group;

153 R⁷, at each occurrence, is selected from the group consisting of:

154 (a) H, (b) =O, (c) F, (d) Cl, (e) Br, (f) I, (g) -CF₃,
 155 (h) -CN, (i) -N₃ (j) -NO₂, (k) -NR⁶(CR⁶R⁶)_tR⁹, (l) -OR⁹, (m) -S(O)_pC(R⁶R⁶)_tR⁹,
 156 (n) -C(O)(CR⁶R⁶)_tR⁹, (o) -OC(O)(CR⁶R⁶)_tR⁹, (p) -SC(O)(CR⁶R⁶)_tR⁹, (q) -
 157 C(O)O(CR⁶R⁶)_tR⁹, (r) -NR⁶C(O)(CR⁶R⁶)_tR⁹, (s) -C(O)NR⁶(CR⁶R⁶)_tR⁹, (t) -
 158 C=NR⁶(CR⁶R⁶)_tR⁹, (u) -C(=NNR⁶R⁶)(CR⁶R⁶)_tR⁹, (v) -
 159 C(=NNR⁶C(O)R⁶)(CR⁶R⁶)_tR⁹, (w) -C(=NOR⁹)(CR⁶R⁶)_tR⁹, (x) -
 160 NR⁶C(O)O(CR⁶R⁶)_tR⁹, (y) -OC(O)NR⁶(CR⁶R⁶)_tR⁹, (z) -
 161 NR⁶C(O)NR⁶(CR⁶R⁶)_tR⁹, (aa) -NR⁶S(O)_p(CR⁶R⁶)_tR⁹, (bb) -
 162 S(O)_pNR⁶(CR⁶R⁶)_tR⁹, (cc) -NR⁶S(O)_pNR⁶(CR⁶R⁶)_tR⁹, (dd) -NR⁶R⁶, (ee) -
 163 NR⁶(CR⁶R⁶), (ff) -OH, (gg) -NR⁶R⁶, (hh) -OCH₃, (ii) -S(O)_pR⁶, (jj) -NC(O)R⁶,
 164 (kk) a C₁₋₆ alkyl group, (ll) a C₂₋₆ alkenyl group, (mm) a C₂₋₆ alkynyl group, (nn) -
 165 C₃₋₁₀ saturated, unsaturated, or aromatic carbocycle, and (oo) 3-10 membered
 166 saturated, unsaturated, or aromatic heterocycle containing one or more
 167 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
 168 wherein any of (kk)-(oo) optionally is substituted with one or more R⁹
 169 groups;

170 alternatively, two R⁷ groups may form -O(CH₂)_uO-;

171 R⁸ is selected from the group consisting of:

172 (a) R⁵, (b) H, (c) a C₁₋₆ alkyl group, (d) a C₂₋₆ alkenyl group, (e) a C₂₋₆ alkynyl
 173 group, (f) a C₃₋₁₀ saturated, unsaturated, or aromatic carbocycle, (g) a 3-10
 174 membered saturated, unsaturated, or aromatic heterocycle containing one or more
 175 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
 176 (h) -C(O)-C₁₋₆ alkyl, (i) -C(O)-C₁₋₆ alkenyl, (j) -C(O)-C₁₋₆ alkynyl, (k) -C(O)-
 177 C₃₋₁₀ saturated, unsaturated, or aromatic carbocycle, and (l) -C(O)-3-10
 178 membered saturated, unsaturated, or aromatic heterocycle containing one or more
 179 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
 180 wherein any of (c)-(k) optionally is substituted with one or more moieties
 181 selected from the group consisting of : (aa) H, (bb) F, (cc) Cl, (dd) Br, (ee)
 182 I, (ff) CN, (gg) NO₂, (hh) OH, (ii) NH₂, (jj) NH(C₁₋₆ alkyl), (kk)
 183 N(C₁₋₆ alkyl)₂, (ll) a C₁₋₆ alkoxy group, (mm) an aryl group, (nn) a

184 substituted aryl group, (oo) a heteroaryl group, (pp) a substituted
185 heteroaryl group, and qq) a C₁₋₆ alkyl group optionally substituted with
186 one or more moieties selected from the group consisting of an aryl group,
187 a substituted aryl group, a heteroaryl group, a substituted heteroaryl group,
188 F, Cl, Br, I, CN, NO₂, CF₃, SCF₃, and OH;

189 R⁹, at each occurrence, independently is selected from the group consisting of:
190 (a) R¹⁰, (b) a C₁₋₆ alkyl group, (c) a C₂₋₆ alkenyl group, (d) a C₂₋₆ alkynyl group, e)
191 a C₃₋₁₀ saturated, unsaturated, or aromatic carbocycle, and f) a 3-10 membered
192 saturated, unsaturated, or aromatic heterocycle containing one or more
193 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
194 wherein any of (b)–(f) optionally is substituted with one or more R¹⁰
195 groups;

196 R¹⁰, at each occurrence, independently is selected from the group consisting of:
197 (a) H, (b) =O, (c) F, (d) Cl, (e) Br, (f) I, (g) –CF₃, (h) –CN, (i) –NO₂, (j) –NR⁶R⁶,
198 (k) –OR⁶, (l) –S(O)pR⁶, (m) –C(O)R⁶, (n) –C(O)OR⁶, (o) –OC(O)R⁶, (p)
199 NR⁶C(O)R⁶, (q) –C(O)NR⁶R⁶, (r) –C(=NR⁶)R⁶, (s) –NR⁶C(O)NR⁶R⁶, (t) –
200 NR⁶S(O)pR⁶, (u) –S(O)pNR⁶R⁶, (v) –NR⁶S(O)pNR⁶R⁶, (w) a C₁₋₆ alkyl group,
201 (x) a C₂₋₆ alkenyl group, (y) a C₂₋₆ alkynyl group, (z) a C₃₋₁₀ saturated,
202 unsaturated, or aromatic carbocycle, and (aa) a 3-10 membered saturated,
203 unsaturated, or aromatic heterocycle containing one or more heteroatoms selected
204 from the group consisting of nitrogen, oxygen, and sulfur,
205 wherein any of (w)–(aa) optionally is substituted with one or more
206 moieties selected from the group consisting of R⁶, F, Cl, Br, I, CN, NO₂, –
207 OR⁶, –NH₂, –NH(C₁₋₆ alkyl), –N(C₁₋₆ alkyl)₂, a C₁₋₆ alkoxy group, a
208 C₁₋₆ alkylthio group, and a C₁₋₆ acyl group;

209 R¹¹ each occurrence, independently is selected from the group consisting of:
210 (a) a carbonyl group, (b) a formyl group, (c) F, (d) Cl, (e) Br, (f) I, (g) CN, (h)
211 NO₂, (i) OR⁸, (j) –S(O)pR⁸, (k) –C(O)R⁸, (l) –C(O)OR⁸,
212 (m) –OC(O)R⁸, (n) –C(O)NR⁸R⁸, (o) –OC(O)NR⁸R⁸,
213 (p) –C(=NR⁸)R⁸, (q) –C(R⁸)(R⁸)OR⁸, (r) –C(R⁸)₂OC(O)R⁸,
214 (s) –C(R⁸)(OR⁸)(CH₂)_rNR⁸R⁸, (t) –NR⁸R⁸, (u) –NR⁸OR⁸,

- 304 -

215 (v) $\text{NR}^8\text{C(O)R}^8$, (w) $\text{NR}^8\text{C(O)OR}^8$, (x) $\text{NR}^8\text{C(O)NR}^8\text{R}^8$, (y) $\text{NR}^8\text{S(O)R}^8$, (z)
 216 $-\text{C(OR}^8)(\text{OR}^8)\text{R}^8$, (aa) $-\text{C(R}^8)_2\text{NR}^8\text{R}^8$, (bb) $=\text{NR}^8$, (cc) $-\text{C(S)NR}^8\text{R}^8$, (dd) $-$
 217 $\text{NR}^8\text{C(S)R}^8$, (ee) $-\text{OC(S)NR}^8\text{R}^8$, (ff) $-\text{NR}^8\text{C(S)OR}^8$, (gg) $-\text{NR}^8\text{C(S)NR}^8\text{R}^8$, (hh) $-$
 218 SC(O)R^8 , (ii) a C₁₋₈ alkyl group, (jj) a C₂₋₈ alkenyl group, (kk) a C₂₋₈ alkynyl
 219 group, (ll) a C₁₋₈ alkoxy group, (mm) a C₁₋₈ alkylthio group, (nn) a C₁₋₈ acyl
 220 group, (oo) a C₃₋₁₀ saturated, unsaturated, or aromatic carbocycle, and (pp) a 3-10
 221 membered saturated, unsaturated, or aromatic heterocycle containing one or more
 222 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
 223 wherein (ii)-(kk) optionally are substituted with one or more R⁵ groups;

224 R¹² is selected from the group consisting of:

(a) H, (b) a C₁₋₆ alkyl group, (c) a C₂₋₆ alkenyl group, (d) a C₂₋₆ alkynyl group, (e) -C(O)R⁵, (f) -C(O)OR⁵, (g) -C(O)-NR⁴R⁴R⁴R⁴, (h) -C(S)R⁵, (i) -C(S)OR⁵, (j) -C(O)SR⁵, (k) -C(S)-NR⁴R⁴R⁴R⁴, (l) a C₃₋₁₀ saturated, unsaturated, or aromatic carbocycle, or (m) a 3-10 membered saturated, unsaturated, or aromatic heterocycle containing one or more heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, (n) a -(C₁₋₆ alkyl) -C₃₋₁₀ saturated, unsaturated, or aromatic carbocycle, or (o) a -(C₁₋₆ alkyl)-3-10 membered saturated, unsaturated, or aromatic heterocycle containing one or more heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, wherein (a)-(d) and (l)-(o) optionally are substituted with one or more R⁵ groups;

236 p at each occurrence is 0, 1, or 2;

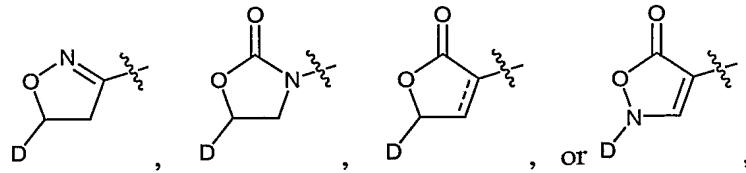
237 r at each occurrence is 0, 1, or 2;

238 t at each occurrence is 0, 1, or 2;

239 u at each occurrence is 1, 2, 3, or 4;

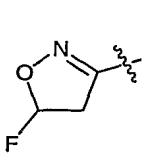
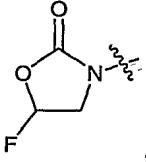
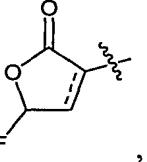
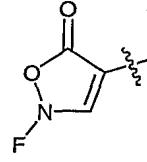
240 provided that

241 i) when T is a 14 or 15 membered macrolide D-E is not



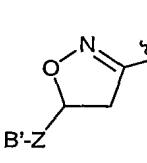
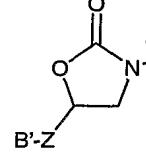
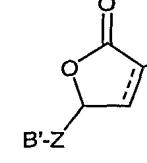
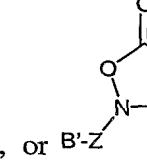
- 305 -

244 ii) when T is a 14 or 15 membered macrolide F-B' is not

245  ,  ,  , or  ,

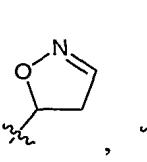
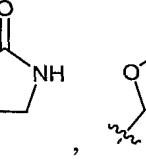
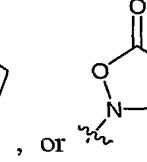
246

247 iii) when T is a 14 or 15 membered macrolide B'-Z-B" is not

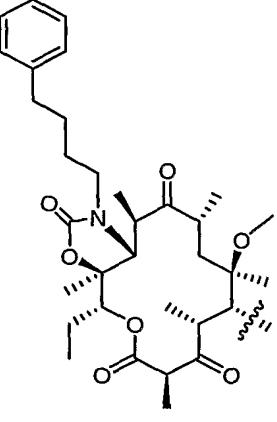
248  ,  ,  , or  ,

249

250 iv) when T is a 14 or 15 membered macrolide R¹¹ is not

251  ,  ,  , or  ,

252 v) when the compound has formula I and T is

253 

254 D is not a single bond or a -CH₂-,

255 vi) when the compound has formula I and T is a 14 or 15 membered

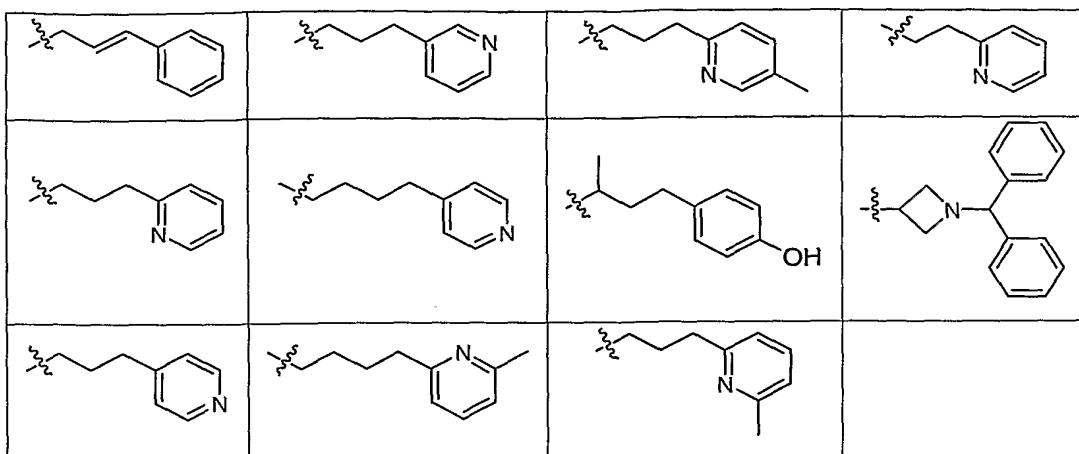
256 macrolide -D-E-F- is not a -CH₂-,

257 vii) when the compound has formula I and T is a 14 or 15 membered

258 macrolide -D-E-F-G- is not a chemical moiety selected from the

259 chemical moieties listed in Table

Table A



, and

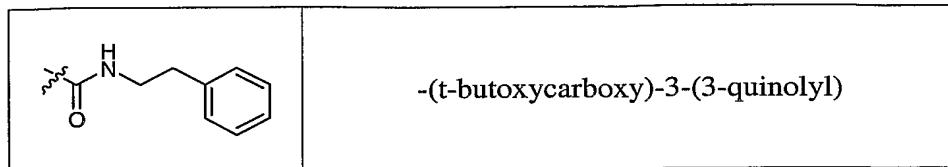
260

261 viii) when the compound has formula II and T is a 16 membered
262 macrolide
263
264 i. -D-E- is not a glycoside attached via its anomeric carbon,
265
266 ii. -D-E-F-G is not a C₁₋₄ (alkyl), C₂₋₄(alkenyl), or C₂₋₄(alkynyl)
267 chain bonded to a 5-10 membered monocyclic or bicyclic
268 carbocycle or heterocycle or bonded to a 5 or 6 membered
269 carbocycle or heterocycle further bonded to a 5 or 6 membered
270 carbocycle or heterocycle, any of said carbocycles or
271 heterocycles being optionally substituted with one or more
272 groups selected from the group consisting of (aa) -OH, (bb) -F,
273 (cc) -Cl, (dd) -I, and (ee) -NO₂, and
274
275 iii. -D-E-F-G- is not a chemical moiety selected from the chemical
276 moieties listed in Table B.

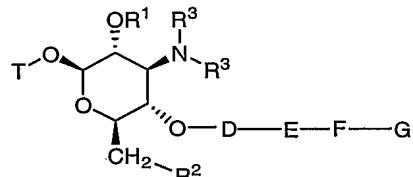
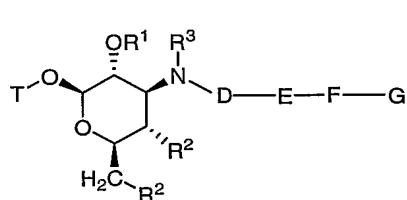
- 307 -

278

Table B



1 2. A compound according to claim 1, having the formula:

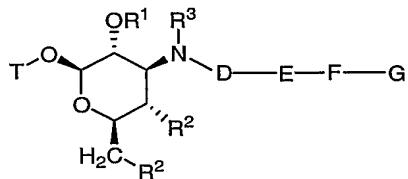


or

II

2 or a pharmaceutically acceptable salt, ester, *N*-oxide, or prodrug thereof wherein T, D, E, F, G, R¹, R² and R³ are as described in claim 1.

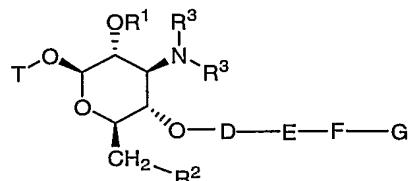
1 3. A compound according to claim 1 or 2 having the formula:



I

2 or a pharmaceutically acceptable salt, ester, *N*-oxide, or prodrug thereof wherein T, D, E, F, G, R¹, R² and R³ are as described in claim 1.

1 4. A compound according to claim 1 or 2 having the formula:



II

3 or a pharmaceutically acceptable salt, ester, *N*-oxide, or prodrug thereof wherein T, D, E, F, G,
4 R¹, R² and R³ are as described in claim 1.

1 5. A compound according to any one of claims 1-4, wherein T is a 14- or 15-
2 membered macrolide connected via a macrocyclic ring carbon atom.

1 6. A compound according to any one of claims 1-5, wherein G is B'.

1 7. A compound according to claim 6 wherein B' is selected from the group
2 consisting of: (a) an aryl group, (b) a heteroaryl group, (c) a biaryl group, and (d) a fused bicyclic
3 or tricyclic unsaturated or aromatic ring system optionally containing one or more carbonyl
4 groups and one or more heteroatoms selected from the group consisting of nitrogen, oxygen, and
5 sulfur, wherein each (a)-(d) optionally is substituted with one or more R¹¹ groups.

1 8. A compound according to claim 6, wherein E is

2 (a) a 3-10 membered saturated, unsaturated, or aromatic heterocycle containing
3 one or more heteroatoms selected from the group consisting of nitrogen, oxygen,
4 and sulfur,

5 (b) a 3-10 membered saturated, unsaturated, or aromatic carbocycle,

6 (c) a -W-[3-10 membered saturated, unsaturated, or aromatic heterocycle
7 containing one or more heteroatoms selected from the group consisting of
8 nitrogen, oxygen, and sulfur],

9 (d) a -W-[3-10 membered saturated, unsaturated, or aromatic carbocycle],

10 (e) -C(O)-, (f) -C(O)O-, (g) -C(O)NR⁴-, (h) -C(=NR⁴)-,

11 (i) -C(=NR⁴)O-, (j) -C(=NR⁴)NR⁴-, (k) -OC(O)-, (l) -OC(O)O-,

12 (m) -OC(O)NR⁴-, (n) -NR⁴C(O)-, (o) -NR⁴C(O)O-,

13 (p) -NR⁴C(O)NR⁴-, (q) -NR⁴C(=NR⁴)NR⁴-, (r) -S(O)_p-,

14 (s) -NR⁴S(O)₂-, (t) -S(O)₂NR⁴-, (u) -C(N-OR⁴)-, (v) -C(N-NR⁴R⁴)-,

15 (w) -C(S)NR⁴-, (x) - NR⁴C(S) -, (y) -C(S)O-, or (z) -OC(S) -, wherein

16 i) any of (a)-(d) immediately above optionally is substituted with one
17 or more R⁵ groups; and

18 ii) W is selected from the group consisting of:

19 (aa) -OCO-, (bb) -OC(O)O-, (cc) -OC(O)NR⁴-, (dd) -

20 NR⁴C(O)O-, (ee) -OCNOR⁴-, (ff) -NR⁴-C(O)O-, (gg) -

21 C(S)(NR⁴)-, (hh) -NR⁴-, (ii) -OC(S)O-, (jj) -OC(S)NR⁴-, (kk) -

22 NR⁴C(S)O-, (ll) -OC(S)NOR⁴-, (mm) -C(S)O-, (nn) -OC(S)-,

- 309 -

(oo) $-C(O)-$, (pp) $-C(O)O-$, (qq) $-C(O)NR^4-$, (rr) $-C(=NR^4)-$,
(ss) $-C(=NR^4)O-$, (tt) $-C(=NR^4)NR^4-$, (uu) $-OC(O)-$, (vv) $-OC(O)O-$,
(ww) $-OC(O)NR^4-$, (xx) $-NR^4C(O)-$, (yy) $-NR^4C(O)O-$,
(zz) $-NR^4C(O)NR^4-$, (aaa) $-NR^4C(=NR^4)NR^4-$,
(bbb) $-S(O)_p-$, (ccc) $-NR^4S(O)_2-$, (ddd) $-S(O)_2NR^4-$, (eee) $-C(N-$
 $OR^4)-$, (fff) $-C(N-NR^4R^4)-$, (ggg) $-C(S)NR^4-$, or (hhh) $-NR^4C(S)-$.

9. A compound according to any one of claims 1-8, wherein

D is selected from the group consisting of (a) a C₁₋₆ alkyl group, (b) a C₂₋₆ alkenyl group,
and (c) a C₂₋₆ alkynyl group, wherein

- 4 i) 0-2 carbon atoms in any of (a)-(c) of D immediately above
5 optionally is replaced by a moiety selected from the group
6 consisting of O, S(O)_p, and NR⁴,
- 7 ii) any of (a)-(c) of D immediately above optionally is substituted with
8 one or more R⁵ groups; and

9 F is selected from the group consisting of (a) a single bond, (b) a C₁₋₆
10 alkyl group, (c) a C₂₋₆ alkenyl group, and (d) a C₂₋₆ alkynyl group, wherein

- 11 i) 0-2 carbon atoms in any of (b)-(d) of F immediately above
12 optionally is replaced by a moiety selected from the group
13 consisting of O, S(O)_p, and NR⁴;
- 14 ii) any of (b)-(d) of F immediately above optionally is substituted with
15 one or more R⁵ groups; and
- 16 iii) any of (b)-(d) of F immediately above optionally is substituted with
17 C₁₋₆ alkyl-R⁵.

10. A compound according to claim 9, wherein

2 E is selected from the group consisting of:

- 3 (a) a 3-10 membered saturated, unsaturated, or aromatic heterocycle containing
4 one or more heteroatoms selected from the group consisting of nitrogen, oxygen,
5 and sulfur,
- 6 (b) a 3-10 membered saturated, unsaturated, or aromatic carbocycle,

- 310 -

(c) a $-W-[3\text{-}10 \text{ membered saturated, unsaturated, or aromatic heterocycle containing one or more heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur}],$

(d) a $-W-[3\text{-}10 \text{ membered saturated, unsaturated, or aromatic carbocycle}],$

(e) $-C(O)-,$ (f) $-C(O)O-,$ (g) $-C(O)NR^4-,$ (h) $-C(=NR^4)-,$ (i) $-C(=NR^4)O-,$ (j) $-C(=NR^4)NR^4-,$ (k) $-OC(O)-,$ (l) $-OC(O)O-,$

(m) $-OC(O)NR^4-,$ (n) $-NR^4C(O)-,$ (o) $-NR^4C(O)O-,$ (p) $-NR^4C(O)NR^4-,$ (q) $-NR^4C(=NR^4)NR^4-,$ (r) $-S(O)_p-,$ (s) $-NR^4S(O)_2-,$ (t) $-S(O)_2NR^4-,$ (u) $-C(N-OR^4)-,$ (v) $-CH_2-,$ (w) $-C(N-NR^4R^4)-,$ (x) $-C(S)NR^4,$ (Y) $-NR^4C(S)-,$ (Z) $-C(S)O-,$ or (aa) $-OC(S)-,$ wherein

- i) any of (a)-(d) immediately above optionally is substituted with one or more R^5 groups; and
- ii) W is selected from the group consisting of:

(aa) $-OCO-,$ (bb) $-OC(O)O-,$ (cc) $-OC(O)NR^4-,$
 (dd) $-NR^4C(O)O-,$ (ee) $-OCNOR^4-,$
 (ff) $-NR^4-C(O)O-,$ (gg) $-C(S)(NR^4)-,$ (hh) $-NR^4-,$
 (ii) $-OC(S)O-,$ (jj) $-OC(S)NR^4-,$ (kk) $-NR^4C(S)O-,$ (ll) $-OC(S)NOR^4-,$ (mm) $-C(S)O-,$ (nn) $-OC(S),$ (oo) $-C(O)-,$ (pp) $-C(O)O-,$ (qq) $-C(O)NR^4-,$ (rr) $-C(=NR^4)-,$
 (ss) $-C(=NR^4)O-,$ (tt) $-C(=NR^4)NR^4-,$ (uu) $-OC(O)-,$ (vv) $-OC(O)O-,$ (ww) $-OC(O)NR^4-,$ (xx) $-NR^4C(O)-,$ (yy) $-NR^4C(O)O-,$ (zz) $-NR^4C(O)NR^4-,$ (aaa) $-NR^4C(=NR^4)NR^4-,$
 (bbb) $-S(O)_p-,$ (ccc) $-NR^4S(O)_2-,$ (ddd) $-S(O)_2NR^4-,$ (eee) $-C(N-OR^4)-,$ (fff) $-C(N-NR^4R^4)-,$ (ggg) $-C(S)NR^4-,$ or (hhh) $-NR^4C(S)-.$

11. A compound according to claim 10, wherein

E is selected from the group consisting of:

- (a) a 3-10 membered saturated, unsaturated, or aromatic heterocycle containing one or more heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, and
- (b) a 3-10 membered saturated, unsaturated, or aromatic carbocycle,

- 311 -

7 wherein (a) and (b) immediately above optionally is substituted with one more R⁵
8 groups.

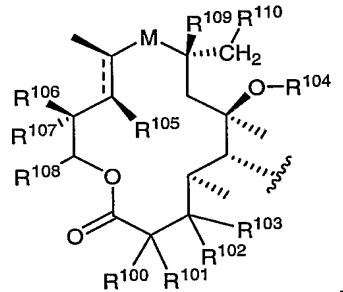
1 12. A compound according to claim 9, wherein

2 E is selected from the group consisting of:

- 3 (a) -C(O)-, (b) -C(O)O-, (c) -C(O)NR⁴-, (d) -C(=NR⁴)-,
4 (e) -C(=NR⁴)O-, (f) -C(=NR⁴)NR⁴-, (g) -OC(O)-, (h) -OC(O)O-, (i) -
5 OC(O)NR⁴-, (j) -NR⁴C(O)-, (k) -NR⁴C(O)O-, (l) -NR⁴C(O)NR⁴-, (m) -
6 NR⁴C(=NR⁴)NR⁴-, (n) -S(O)_p-, (o) -NR⁴S(O)₂-, (p) -S(O)₂NR⁴-, (q) -C(N-
7 OR⁴)-, (r) -CH₂- , (s) -C(N-NR⁴R⁴)-, (t) -C(S)NR⁴, (u) -NR⁴C(S)-, (v) -C(S)O,
8 and (w) -OC(S)-.

1 13. A compound according to any one of according to any one of claims 1-12,

2 wherein T is:



3

4

5 or an N-oxide, pharmaceutically acceptable salt, ester or prodrug thereof,

6 wherein:

7 M is selected from the group consisting of:

- 8 (a) -C((O)-, (b) -CH(-OR¹¹⁴)-, (c) -NR¹¹⁴-CH₂-, (d) -CH₂-NR¹¹⁴-, (e) -
9 CH(NR¹¹⁴R¹¹⁴)-, (f) -C(=NNR¹¹⁴R¹¹⁴)-, (g) -NR¹¹⁴-C(O)-, (h) -C(O)NR¹¹⁴-, (i) -
10 -C(=NR¹¹⁴)-, and (j) -CR¹¹⁵R¹¹⁵-, (k) -C(=NOR¹²⁷)-;

11 R¹⁰⁰ is selected from the group consisting of H and C₁₋₆ alkyl;

12 R¹⁰¹ is selected from the group consisting of:

- 13 (a) H, (b) Cl, (c) F, (d) Br, (e) I, (f) -NR¹¹⁴R¹¹⁴, (g) -NR¹¹⁴C(O)R¹¹⁴, (h) -OR¹¹⁴,
14 (i) -OC(O)R¹¹⁴, (j) -OC(O)OR¹¹⁴, (k) -OC(O)NR¹¹⁴R¹¹⁴, (l) -O-C₁₋₆ alkyl,
15 (m) -OC(O)-C₁₋₆ alkyl, (n) -OC(O)O-C₁₋₆ alkyl, (o) -OC(O)NR¹¹⁴-C₁₋₆ alkyl,
16 (p) C₁₋₆ alkyl, (q) C₁₋₆ alkenyl, (r) C₁₋₆ alkynyl,

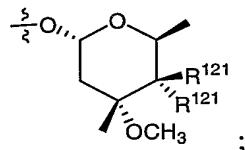
- 312 -

17 wherein any of (l) – (r) optionally is substituted with one or more
18 R¹¹⁵ groups;

19 R¹⁰² is H;

20 R¹⁰³ is selected from the group consisting of:

- 21 (a) H, (b) –OR¹¹⁴, (c) –O–C₁₋₆ alkyl–R¹¹⁵, (d) –OC((O)R¹¹⁴,
- 22 (e) –OC(O)–C₁₋₆ alkyl–R¹¹⁵, (f) –OC(O)OR¹¹⁴, (g) –OC(O)O–C₁₋₆ alkyl–R¹¹⁵,
- 23 (h) –OC(O)NR¹¹⁴R¹¹⁴, (i) –OC(O)NR¹¹⁴–C₁₋₆ alkyl–R¹¹⁵, and
- 24 (j)



25 ;

26 alternatively, R¹⁰² and R¹⁰³ taken together form a carbonyl group;

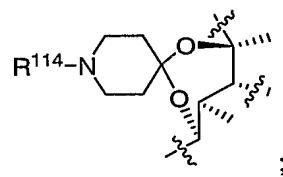
27 alternatively, R¹⁰¹ and R¹⁰³ taken together are a single bond between the respective
28 carbons to which these two groups are attached thereby creating a double bond between
29 the carbons to which R¹⁰⁰ and R¹⁰² are attached;

31 alternatively, R¹⁰¹ and R¹⁰³ taken together are an epoxide moiety.

33 R¹⁰⁴ is selected from the group consisting of:

- 35 (a) H, (b) R¹¹⁴, (c) –C(O)R¹¹⁴(d) –C(O)OR¹¹⁴ (e) –C(O)NR¹¹⁴R¹¹⁴, (f) –C₁₋₆ alkyl–
36 K–R¹¹⁴, (g) –C₂₋₆ alkenyl–K–R¹¹⁴, and (h) –C₂₋₆ alkynyl–K–R¹¹⁴;

37 alternatively R¹⁰³ and R¹⁰⁴, taken together with the atoms to which they are bonded, form:



38 ;

39 K is selected from the group consisting of:

- 40 (a) –C(O)–, (b) –C(O)O–, (c) –C(O)NR¹¹⁴–, (d) –C(=NR¹¹⁴)–, (e) –C(=NR¹¹⁴)O–,
- 41 (f) –C(=NR¹¹⁴)NR¹¹⁴–, (g) –OC(O)–, (h) –OC(O)O–, (i) –OC(O)NR¹¹⁴–,
- 42 (j) –NR¹¹⁴C(O)–, (k) –NR¹¹⁴C(O)O–, (l) –NR¹¹⁴C(O)NR¹¹⁴–,
- 43 (m) –NR¹¹⁴C(=NR¹¹⁴)NR¹¹⁴–, and (o) –S(O)p–;

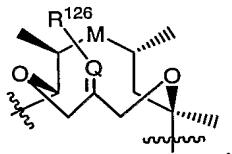
- 313 -

44 R^{105} is selected from the group consisting of:

45 (a) R^{114} , (b) $-OR^{114}$, (c) $-NR^{114}R^{114}$, (d) $-O-C_{1-6}$ alkyl- R^{115} , (e) $-C(O)-R^{114}$,
 46 (f) $-C(O)-C_{1-6}$ alkyl- R^{115} , (g) $-OC(O)-R^{114}$, (h) $-OC(O)-C_{1-6}$ alkyl- R^{115} ,
 47 (i) $-OC(O)O-R^{114}$, (j) $-OC(O)O-C_{1-6}$ alkyl- R^{115} , (k) $-OC(O)NR^{114}R^{114}$,
 48 (l) $-OC(O)NR^{114}-C_{1-6}$ alkyl- R^{115} , (m) $-C(O)-C_{2-6}$ alkenyl- R^{115} , and
 49 (n) $-C(O)-C_{2-6}$ alkynyl- R^{115} ;

50 alternatively, R^{104} and R^{105} , taken together with the atoms to which they are bonded,

51 form:



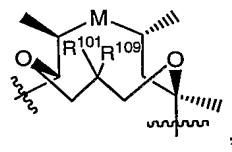
52

53 wherein

54 Q is CH or N, and R^{126} is $-OR^{114}$, $-NR^{114}$ or R^{114} ;

55 alternatively, R^{104} and R^{105} , taken together with the atoms to which they are bonded,

56 form:



57

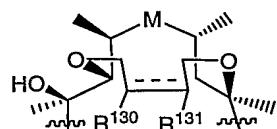
58 wherein

59 i) R^{101} is as defined above;
 60 ii) alternately, R^{101} and R^{109} may be taken together to form a carbonyl
 61 group;
 62 iii) alternately, R^{101} and R^{109} may be taken together to form the group
 63 $-O(CR^{116}R^{116})_uO-$;

64

65 alternatively, R^{104} and R^{105} , taken together with the atoms to which they are bonded,

66 form:



67

68 i) R^{130} is $-OH$, $=C(O)$, or R^{114} ,

- 314 -

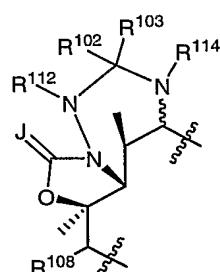
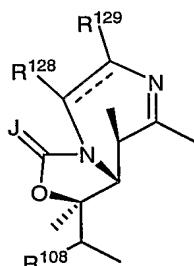
75 P^{106} is selected from the group consisting of:

(a) $-\text{OR}^{114}$, (b) $-\text{C}_{1-6}\text{alkoxy}-\text{R}^{115}$, (c) $-\text{C}(\text{O})\text{R}^{114}$, (d) $-\text{OC}(\text{O})\text{R}^{114}$, (e) $-\text{OC}(\text{O})\text{OR}^{114}$, (f) $-\text{OC}(\text{O})\text{NR}^{114}\text{R}^{114}$, and (g) $-\text{NR}^{114}\text{R}^{114}$.

alternatively, R¹⁰⁵ and R¹⁰⁶ taken together with the atoms to which they are attached form a 5-membered ring by attachment to each other through a chemical moiety selected from the group consisting of:

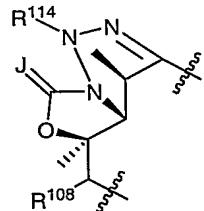
(a) $-\text{OC}(\text{R}^{115})_2\text{O}-$, (b) $-\text{OC}(\text{O})\text{O}-$, (c) $-\text{OC}(\text{O})\text{NR}^{114}-$, (d) $-\text{NR}^{114}\text{C}(\text{O})\text{O}-$,
 (e) $-\text{OC}(\text{O})\text{NOR}^{114}-$, (f) $-\text{NOR}^{114}-\text{C}(\text{O})\text{O}-$, (g) $-\text{OC}(\text{O})\text{NNR}^{114}\text{R}^{114}-$,
 (h) $-\text{NNR}^{114}\text{R}^{114}-\text{C}(\text{O})\text{O}-$, (i) $-\text{OC}(\text{O})\text{C}(\text{R}^{115})_2-$, (j) $-\text{C}(\text{R}^{115})_2\text{C}(\text{O})\text{O}-$, (k) $-\text{OC}(\text{S})\text{O}-$, (l) $-\text{OC}((\text{S})\text{NR}^{114}-$, (m) $-\text{NR}^{114}\text{C}(\text{S})\text{O}-$, (n) $-\text{OC}(\text{S})\text{NOR}^{114}-$, (o) $-\text{NOR}^{114}-\text{C}(\text{S})\text{O}-$, (p) $-\text{OC}(\text{S})\text{NNR}^{114}\text{R}^{114}-$, (q) $-\text{NNR}^{114}\text{R}^{114}-\text{C}(\text{S})\text{O}-$, (r) $-\text{OC}(\text{S})\text{C}(\text{R}^{115})_2-$, and (s) $-\text{C}(\text{R}^{115})_2\text{C}(\text{S})\text{O}-$;

87 alternatively, M, R¹⁰⁵, and R¹⁰⁶ taken together with the atoms to which they are attached form:



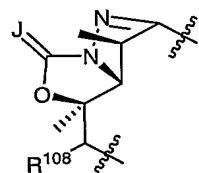
- 315 -

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92

93

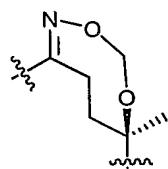


94

95 wherein J is selected from the group consisting of O, S and NR¹¹⁴;

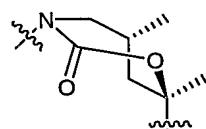
96 alternatively, M and R¹⁰⁴ taken together with the atoms to which they are attached form:

97



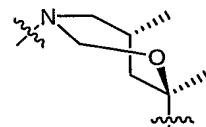
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104 R¹⁰⁷ is selected from the group consisting of

105 (a) H, (b) -C₁₋₄ alkyl, (c) -C₂₋₄ alkenyl, which can be further substituted with C₁₋₁₂
106 alkyl or one or more halogens, (d) -C₂₋₄ alkynyl, which can be further substituted
107 with C₁₋₁₂ alkyl or one or more halogens, (e) aryl or heteroaryl, which can be
108 further substituted with C₁₋₁₂ alkyl or one or more halogens, (f) -C(O)H, (g) -

109 COOH, (h) —CN, (i) —COOR¹¹⁴, (j) —C(O)NR¹¹⁴R¹¹⁴, (k) —C(O)R¹¹⁴, and (l) —
110 C(O)SR¹¹⁴, wherein (b) is further substituted with one or more substituents
111 selected from the group consisting of (aa) —OR¹¹⁴, (bb) halogen, (cc) —SR¹¹⁴, (dd)
112 C₁₋₁₂ alkyl, which can be further substituted with halogen, hydroxyl, C₁₋₆ alkoxy,
113 or amino, (ee) —OR¹¹⁴, (ff) —SR¹¹⁴, (gg) —NR¹¹⁴R¹¹⁴, (hh) —CN, (ii) —NO₂, (jj) —
114 NC(O)R¹¹⁴, (kk) —COOR¹¹⁴, (ll) —N₃, (mm) =N—O—R¹¹⁴, (nn) =NR¹¹⁴, (oo) =N—
115 NR¹¹⁴R¹¹⁴, (pp) =N—NH—C(O)R¹¹⁴, and (qq) =N—NH—C(O)NR¹¹⁴R¹¹⁴;
116 alternatively R¹⁰⁶ and R¹⁰⁷ are taken together with the atom to which they are attached to
117 form an epoxide, a carbonyl, an olefin, or a substituted olefin, or a C₃-C₇ carbocyclic, carbonate,
118 or carbamate, wherein the nitrogen of said carbamate can be further substituted with a
119 C₁-C₆ alkyl;

120 R¹⁰⁸ is selected from the group consisting of:

121 (a) C₁₋₆ alkyl, (b) C₂₋₆ alkenyl, and (c) C₂₋₆ alkynyl,

122 wherein any of (a)—(c) optionally is substituted with one or more R¹¹⁴
123 groups;

124 R¹¹¹ is selected from the group consisting of H and —C(O)R¹¹⁴;

125 R¹¹² is selected from the group consisting of H, OH, and OR¹¹⁴;

126 R¹¹³ is selected from the group consisting of:

127 (a) H, (b) R¹¹⁴, (c) —C₁₋₆ alkyl—K—R¹¹⁴, (d) —C₂₋₆ alkenyl—K—R¹¹⁴, and

128 (e) —C₂₋₆ alkynyl—K—R¹¹⁴,

129 wherein any of (c)-(e) optionally is substituted with one or more R¹¹⁵
130 groups;

131 R¹¹⁴, at each occurrence, independently is selected from the group consisting of:

132 (a) H, (b) C₁₋₆ alkyl, (c) C₂₋₆ alkenyl, (d) C₂₋₆ alkynyl, (e) C₆₋₁₀ saturated,
133 unsaturated, or aromatic carbocycle, (f) 3-12 membered saturated, unsaturated, or
134 aromatic heterocycle containing one or more heteroatoms selected from the group
135 consisting of nitrogen, oxygen, and sulfur, (g) —C(O)—C₁₋₆ alkyl, (h) —C(O)—
136 C₂₋₆ alkenyl, (i) —C(O)—C₂₋₆ alkynyl, (j) —C(O)—C₆₋₁₀ saturated, unsaturated, or
137 aromatic carbocycle, (k) —C(O)—3-12 membered saturated, unsaturated, or
138 aromatic heterocycle containing one or more heteroatoms selected from the group
139 consisting of nitrogen, oxygen, and sulfur, (l) —C(O)O—C₁₋₆ alkyl, (m) —C(O)O—
140 C₂₋₆ alkenyl, (n) —C(O)O—C₂₋₆ alkynyl, (o) —C(O)O—C₆₋₁₀ saturated, unsaturated,

141 or aromatic carbocycle, (p) $-C(O)O-$ 3-12 membered saturated, unsaturated, or
142 aromatic heterocycle containing one or more heteroatoms selected from the group
143 consisting of nitrogen, oxygen, and sulfur, and (q) $-C(O)NR^{116}R^{116}$,
144 wherein any of (b)-(p) optionally is substituted with one or more R^{115}
145 groups, wherein one or more non-terminal carbon moieties of any of (b)-
146 (d) optionally is replaced with oxygen, $S(O)_p$, or $-NR^{116}$,
147 alternatively, $NR^{114}R^{114}$ forms a 3-7 membered saturated, unsaturated or aromatic ring
148 including the nitrogen atom to which the R^{114} groups are bonded and optionally one or more
149 moieties selected from the group consisting of O, $S(O)_p$, N, and NR^{118} ;
150 R^{115} is selected from the group consisting of:
151 (a) R^{117} , (b) C_{1-8} alkyl, (c) C_{2-8} alkenyl, (d) C_{2-8} alkynyl, (e) C_{3-12} saturated,
152 unsaturated, or aromatic carbocycle, (f) 3-12 membered saturated, unsaturated, or
153 aromatic heterocycle containing one or more heteroatoms selected from the group
154 consisting of nitrogen, oxygen, and sulfur,
155 wherein any of (b)-(f) optionally is substituted with one or more R^{117}
156 groups;
157 R^{116} , at each occurrence, independently is selected from the group consisting of:
158 (a) H, (b) C_{1-6} alkyl, (c) C_{2-6} alkenyl, (d) C_{2-6} alkynyl, (e) C_{3-10} saturated,
159 unsaturated, or aromatic carbocycle, and (f) 3-10 membered saturated,
160 unsaturated, or aromatic heterocycle containing one or more heteroatoms selected
161 from the group consisting of nitrogen, oxygen, and sulfur,
162 wherein one or more non-terminal carbon moieties of any of (b)-(d)
163 optionally is replaced with oxygen, $S(O)_p$, or $-NR^{114}$, wherein any of (b)-
164 (f) optionally is substituted with one or more moieties selected from the
165 group consisting of:
166 (aa) carbonyl, (bb) formyl, (cc) F, (dd) Cl, (ee) Br, (ff) I, (gg) CN,
167 (hh) N_3 , (ii) NO_2 , (jj) OR^{118} , (kk) $-S(O)_pR^{118}$, (ll) $-C(O)R^{118}$, (mm)
168 $-C(O)OR^{118}$, (nn) $-OC(O)R^{118}$, (oo) $-C(O)NR^{118}R^{118}$, (pp) $-$
169 $OC(O)NR^{118}R^{118}$, (qq) $-C(=NR^{118})R^{118}$, (rr) $-C(R^{118})(R^{118})OR^{118}$,
170 (ss) $-C(R^{118})_2OC(O)R^{118}$, (tt) $-C(R^{118})(OR^{118})(CH_2)_rNR^{118}R^{118}$,
171 (uu) $-NR^{118}R^{118}$; (vv) $-NR^{118}OR^{118}$, (ww) $-NR^{118}C(O)R^{118}$, (xx) $-$
172 $NR^{118}C(O)OR^{118}$, (yy) $-NR^{118}C(O)NR^{118}R^{118}$, (zz) $-$

- 318 -

205 membered saturated, unsaturated, or aromatic heterocycle containing one or more
206 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
207 wherein any of (dd)–(hh) optionally is substituted with one or more R¹¹⁹
208 groups;
209 alternatively, two R¹¹⁷ groups may form –O(CH₂)_uO–;
210 R¹¹⁸ is selected from the group consisting of:
211 (a) H, (b) C₁₋₆ alkyl, (c) C₂₋₆ alkenyl, (d) C₂₋₆ alkynyl, (e) C₃₋₁₀ saturated,
212 unsaturated, or aromatic carbocycle, (f) 3-10 membered saturated, unsaturated, or
213 aromatic heterocycle containing one or more heteroatoms selected from the group
214 consisting of nitrogen, oxygen, and sulfur, (g) –C(O)–C₁₋₆ alkyl, (h) –C(O)–
215 C₁₋₆ alkenyl, (g) –C(O)–C₁₋₆ alkynyl, (i) –C(O)–C₃₋₁₀ saturated, unsaturated, or
216 aromatic carbocycle, and (j) –C(O)–3-10 membered saturated, unsaturated, or
217 aromatic heterocycle containing one or more heteroatoms selected from the group
218 consisting of nitrogen, oxygen, and sulfur,
219 wherein any of (b)–(j) optionally is substituted with one or more moieties
220 selected from the group consisting of : (aa) H, (bb) F, (cc) Cl, (dd) Br, (ee)
221 I, (ff) CN, (gg) NO₂, (hh) OH, (ii) NH₂, (jj) NH(C₁₋₆ alkyl), (kk)
222 N(C₁₋₆ alkyl)₂, (ll) C₁₋₆ alkoxy, (mm) aryl, (nn) substituted aryl, (oo)
223 heteroaryl, (pp) substituted heteroaryl, and (qq) C₁₋₆ alkyl, optionally
224 substituted with one or more moieties selected from the group consisting
225 of aryl, substituted aryl, heteroaryl, substituted heteroaryl, F, Cl, Br, I, CN,
226 NO₂, and OH;
227 R¹¹⁹, at each occurrence, independently is selected from the group consisting of:
228 (a) R¹²⁰, (b) C₁₋₆ alkyl, (c) C₂₋₆ alkenyl, (d) C₂₋₆ alkynyl, (e) C₃₋₁₀ saturated,
229 unsaturated, or aromatic carbocycle, and (f) 3-10 membered saturated,
230 unsaturated, or aromatic heterocycle containing one or more heteroatoms selected
231 from the group consisting of nitrogen, oxygen, and sulfur,
232 wherein any of (b)–(f) optionally is substituted with one or more R¹¹⁹
233 groups;
234 R¹²⁰, at each occurrence, independently is selected from the group consisting of:

- 320 -

(a) H, (b) =O, (c) F, (d) Cl, (e) Br, (f) I, (g) ($CR^{116}R^{116}$)_rCF₃, (h) ($CR^{116}R^{116}$)_rCN,
 (i) ($CR^{116}R^{116}$)_rNO₂, (j) ($CR^{116}R^{116}$)_rNR¹¹⁶R¹¹⁶, (k) ($CR^{116}R^{116}$)_rOR¹¹⁴,
 (l) ($CR^{116}R^{116}$)_rS(O)_pR¹¹⁶, (m) ($CR^{116}R^{116}$)_rC(O)R¹¹⁶, (n) ($CR^{116}R^{116}$)_rC(O)OR¹¹⁶,
 (o) ($CR^{116}R^{116}$)_rOC(O)R¹¹⁶, (p) ($CR^{116}R^{116}$)_rNR¹¹⁶C(O)R¹¹⁶,
 (q) ($CR^{116}R^{116}$)_rC(O)NR¹¹⁶R¹¹⁶, (r) ($CR^{116}R^{116}$)_rC(=NR¹¹⁶)R¹¹⁶,
 (s) ($CR^{116}R^{116}$)_rNR¹¹⁶C(O)NR¹¹⁶R¹¹⁶, (t) ($CR^{116}R^{116}$)_rNR¹¹⁶S(O)_pR¹¹⁶,
 (u) ($CR^{116}R^{116}$)_rS(O)_pNR¹¹⁶R¹¹⁶, (v) ($CR^{116}R^{116}$)_rNR¹¹⁶S(O)_pNR¹¹⁶R¹¹⁶,
 (w) C₁₋₆ alkyl, (x) C₂₋₆ alkenyl, (y) C₂₋₆ alkynyl, (z) ($CR^{116}R^{116}$)_r—C₃₋₁₀ saturated,
 unsaturated, or aromatic carbocycle, and (aa) ($CR^{116}R^{116}$)_r—3-10 membered
 saturated, unsaturated, or aromatic heterocycle containing one or more
 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
 wherein any of (w)–(aa) optionally is substituted with one or more
 moieties selected from the group consisting of R¹¹⁶, F, Cl, Br, I, CN, NO₂,
 —OR¹¹⁶, —NH₂, —NH(C₁₋₆ alkyl), —N(C₁₋₆ alkyl)₂, C₁₋₆ alkoxy,
 C₁₋₆ alkylthio, and C₁₋₆ acyl;

R^{121} , at each occurrence, independently is selected from the group consisting of:

(a) H, (b) —OR¹¹⁸, (c) —O—C₁₋₆ alkyl—OC(O)R¹¹⁸, (d) —O—C₁₋₆ alkyl—OC(O)OR¹¹⁸,
 (e) —O—C₁₋₆ alkyl—OC(O)NR¹¹⁸R¹¹⁸, (f) —O—C₁₋₆ alkyl—C(O)NR¹¹⁸R¹¹⁸, (g) —O—
 C₁₋₆ alkyl—NR¹¹⁸C(O)R¹¹⁸, (h) —O—C₁₋₆ alkyl—NR¹¹⁸C(O)OR¹¹⁸, (i) —O—C₁₋₆ alkyl—
 NR¹¹⁸C(O)NR¹¹⁸R¹¹⁸, (j) —O—C₁₋₆ alkyl—NR¹¹⁸C(=N(H))NR¹¹⁸R¹¹⁸, (k) —O—
 C₁₋₆ alkyl—S(O)_pR¹¹⁸, (l) —O—C₂₋₆ alkenyl—OC(O)R¹¹⁸, (m) —O—C₂₋₆ alkenyl—
 OC(O)OR¹¹⁸, (n) —O—C₂₋₆ alkenyl—OC(O)NR¹¹⁸R¹¹⁸, (o) —O—C₂₋₆ alkenyl—
 C(O)NR¹¹⁸R¹¹⁸, (p) —O—C₂₋₆ alkenyl—NR¹¹⁸C(O)R¹¹⁸, (q) —O—C₂₋₆ alkenyl—
 NR¹¹⁸C(O)OR¹¹⁸, (r) —O—C₂₋₆ alkenyl—NR¹¹⁸C(O)NR¹¹⁸R¹¹⁸, (s) —O—C₂₋₆ alkenyl—
 NR¹¹⁸C(=N(H))NR¹¹⁸R¹¹⁸, (t) —O—C₂₋₆ alkenyl—S(O)_pR¹¹⁸,
 (u) —O—C₂₋₆ alkynyl—OC(O)R¹¹⁸, (v) —O—C₂₋₆ alkynyl—OC(O)OR¹¹⁸,
 (w) —O—C₂₋₆ alkynyl—OC(O)NR¹¹⁸R¹¹⁸, (x) —O—C₂₋₆ alkynyl—C(O)NR¹¹⁸R¹¹⁸, (y) —
 O—C₂₋₆ alkynyl—NR¹¹⁸C(O)R¹¹⁸, (z) —O—C₂₋₆ alkynyl—NR¹¹⁸C(O)OR¹¹⁸, (aa) —O—
 C₂₋₆ alkynyl—NR¹¹⁸C(O)NR¹¹⁸R¹¹⁸,
 (bb) —O—C₂₋₆ alkynyl—NR¹¹⁸C(=N(H))NR¹¹⁸R¹¹⁸, (cc) —O—C₂₋₆ alkynyl—S(O)_pR¹¹⁸;
 and (dd) —NR¹¹⁸R¹¹⁸;

- 321 -

266 alternatively, two R¹²¹ groups taken together form =O, =NOR¹¹⁸, or =NNR¹¹⁸R¹¹⁸;
267 R¹²² is R¹¹⁵;

268 R¹²³ is selected from the group consisting of:

269 (a) R¹¹⁶, (b) F, (c) Cl, (d) Br, (e) I, (f) CN, (g) NO₂, and (h) -OR¹¹⁴;

270 alternatively, R¹²² and R¹²³ taken together are -O(CH₂)_uO-;

271 R¹²⁴, at each occurrence, independently is selected from the group consisting of:

272 (a) H, (b) F, (c) Cl, (d) Br, (e) I, (f) CN, (g) -OR¹¹⁴, (h) -NO₂, (i) -NR¹¹⁴R¹¹⁴, (j)
273 C₁₋₆ alkyl, (k) C₁₋₆ acyl, and (l) C₁₋₆ alkoxy;

274 R¹²⁵ is selected from the group consisting of:

275 (a) C₁₋₆ alkyl, (b) C₂₋₆ alkenyl, (c) C₂₋₆ alkynyl, (d) C₁₋₆ acyl, (e) C₁₋₆ alkoxy,

276 (f) C₁₋₆ alkylthio, (g) saturated, unsaturated, or aromatic C₅₋₁₀ carbocycle,

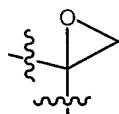
277 (h) saturated, unsaturated, or aromatic 5-10 membered heterocycle containing one
278 or more heteroatoms selected from the group consisting of nitrogen, oxygen, and
279 sulfur, (i) -O-C₁₋₆ alkyl-saturated, unsaturated, or aromatic 5-10 membered
280 heterocycle containing one or more heteroatoms selected from the group
281 consisting of nitrogen, oxygen, and sulfur, (j) -NR¹¹⁴-C₁₋₆ alkyl-saturated,
282 unsaturated, or aromatic 5-10 membered heterocycle containing one or more
283 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur,
284 (k) saturated, unsaturated, or aromatic 10-membered bicyclic ring system
285 optionally containing one or more heteroatoms selected from the group consisting
286 of nitrogen, oxygen, and sulfur, (l) saturated, unsaturated, or aromatic 13-
287 membered tricyclic ring system optionally containing one or more heteroatoms
288 selected from the group consisting of nitrogen, oxygen, and sulfur, (m) -OR¹¹⁴,
289 (n) -NR¹¹⁴R¹¹⁴, (o) -S(O)_pR¹¹⁴, and (p) -R¹²⁴,

290 wherein any of (a)-(l) optionally is substituted with one or more R¹¹⁵
291 groups;

292 alternatively, R¹²⁵ and one R¹²⁴ group, taken together with the atoms to which they are
293 bonded, form a 5-7 membered saturated or unsaturated carbocycle, optionally substituted with
294 one or more R¹¹⁵ groups; or a 5-7 membered saturated or unsaturated heterocycle containing one
295 or more atoms selected from the group consisting of nitrogen, oxygen, and sulfur, and optionally
296 substituted with one or more R¹¹⁵ groups;

297 R¹²⁶ at each occurrence, independently is selected from the group consisting of:

- 322 -



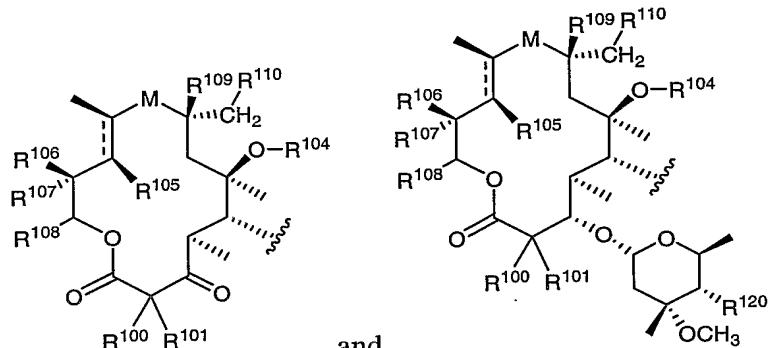
Alternately, R¹²⁸ and R¹²⁹ together with the carbons to which they are attached form a 3-6 membered saturated, unsaturated or aromatic carbocyclic or heterocyclic ring which may optionally be substituted with one or more R¹¹⁴ groups;

m, at each occurrence is 0, 1, 2, 3, 4, or 5;

n, at each occurrence is 1, 2, or 3.

1 14. A compound according to any one of claims 1-13, wherein T is a macrolide
2 selected from the group consisting of:

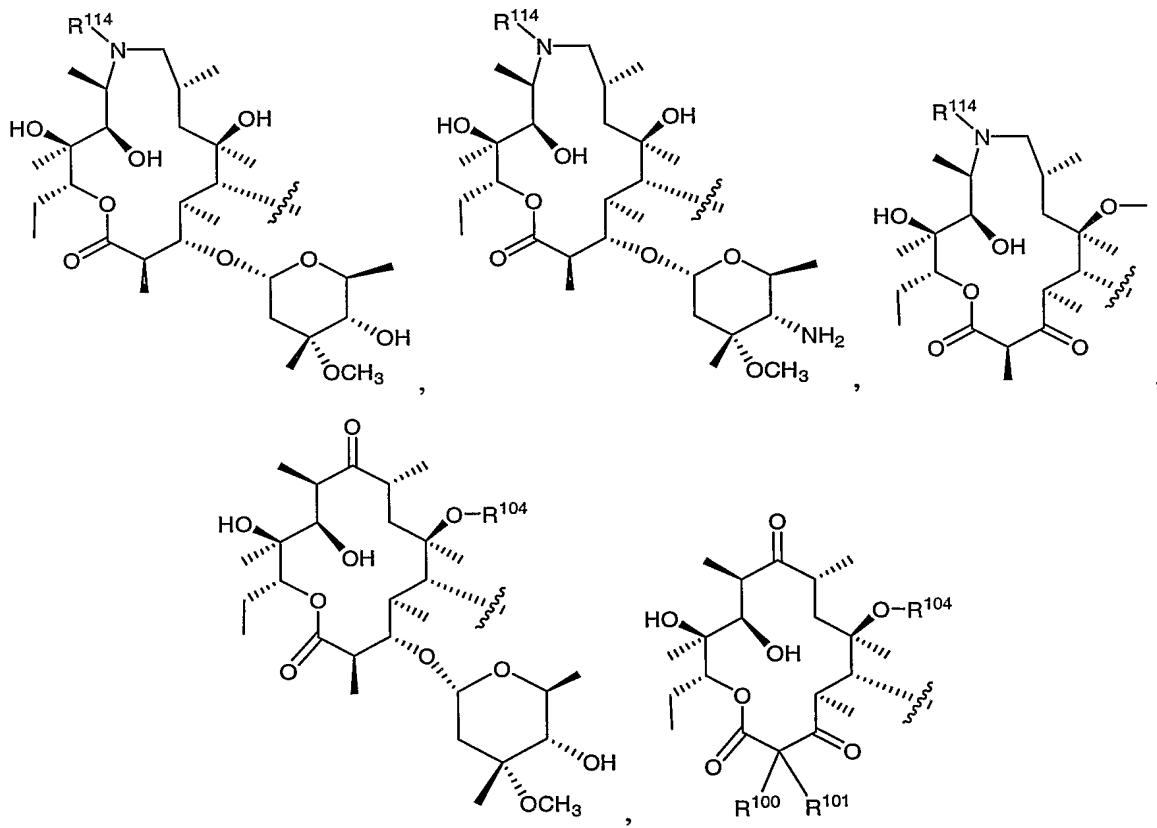
- 323 -



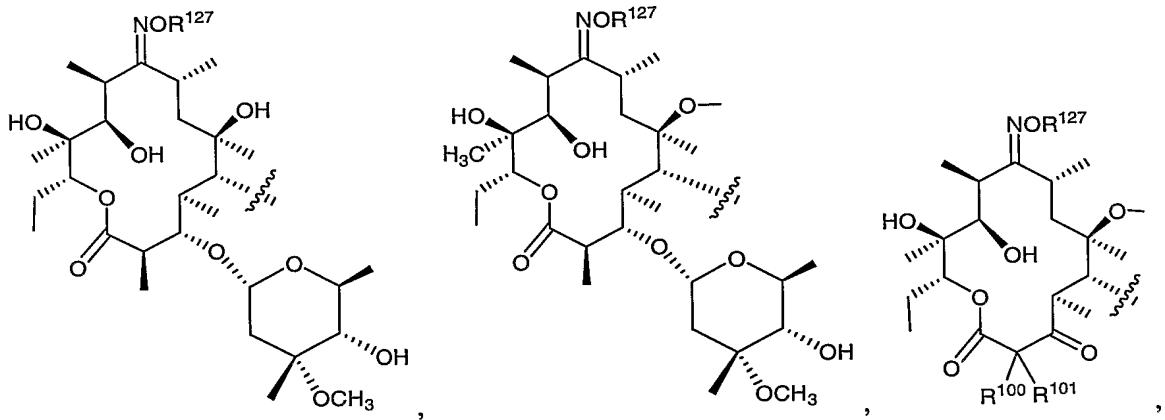
3 $R^{100} R^{101}$ and

4 or an *N*-oxide pharmaceutically acceptable salt, ester, or prodrug thereof, wherein M, R¹⁰⁰, R¹⁰¹,
5 R¹⁰⁴, R¹⁰⁵, R¹⁰⁶, R¹⁰⁷, R¹⁰⁸, R¹⁰⁹, R¹¹⁰, and R¹²⁰ are as described in claim 13.

1 15. A compound according to any one of claims 1-14, wherein T is a macrolide
2 selected from the group consisting of:

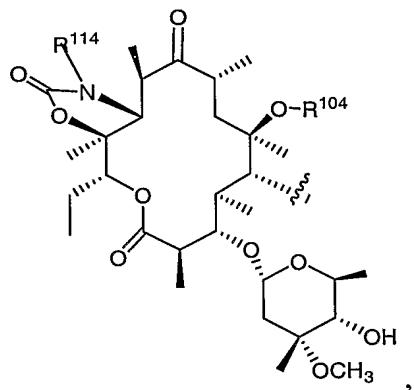


- 324 -



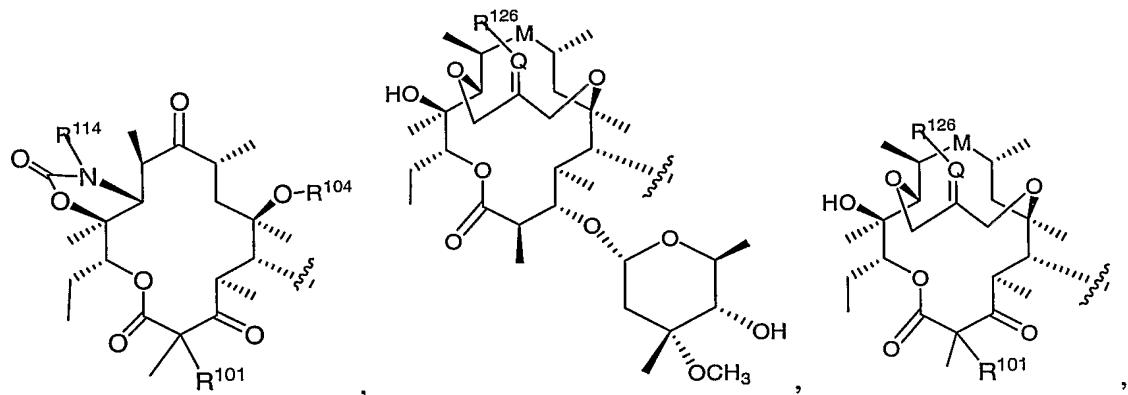
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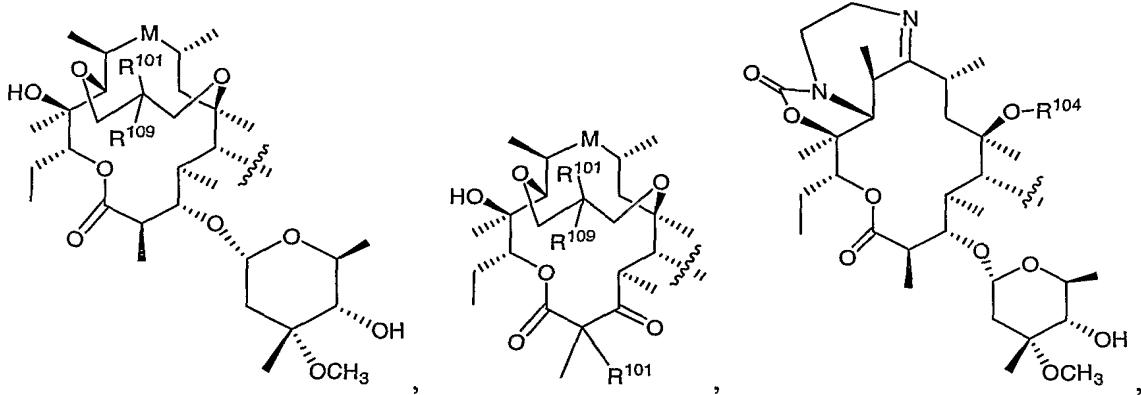
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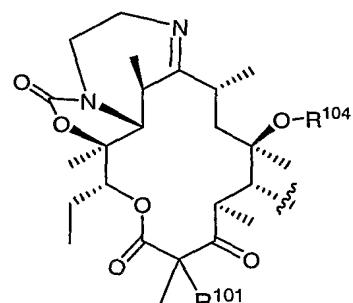
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and

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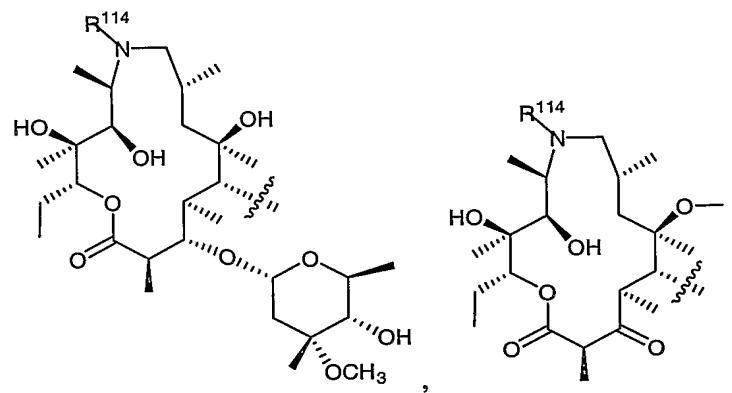
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17 or an *N*-oxide pharmaceutically acceptable salt, ester, or prodrug thereof,18 wherein M, R¹⁰⁰, R¹⁰¹, R¹⁰², R¹⁰⁴, R¹⁰⁹, R¹¹⁴, R¹²⁶ and R¹²⁷ are as described in claim 13.

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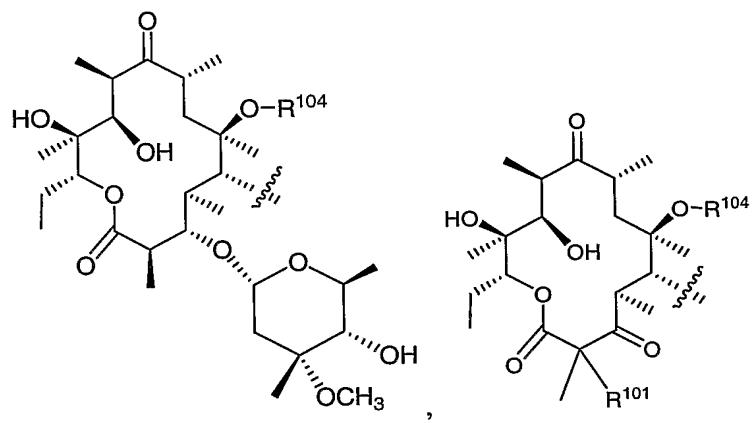
1 16. A compound according to any one of claims 1-15, wherein T is a macrolide
 2 selected from the group consisting of:

- 326 -



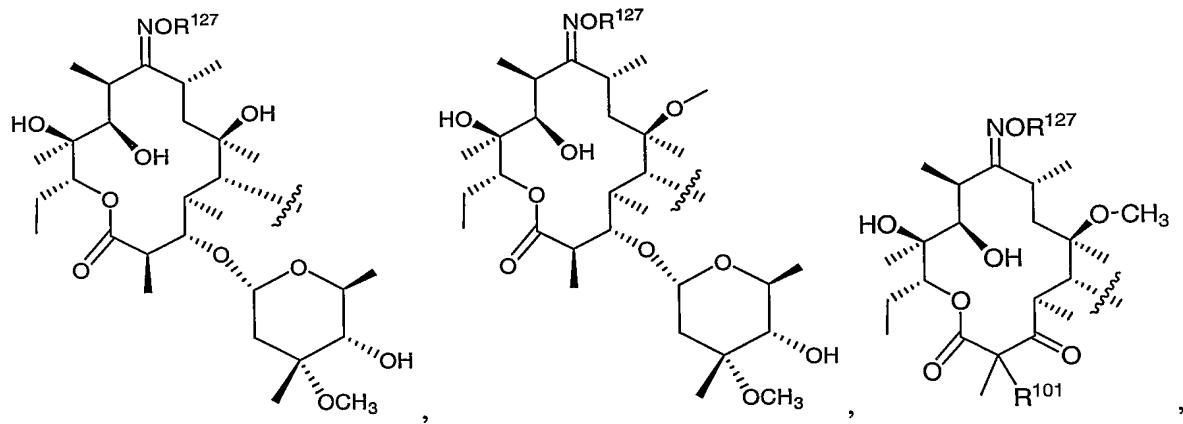
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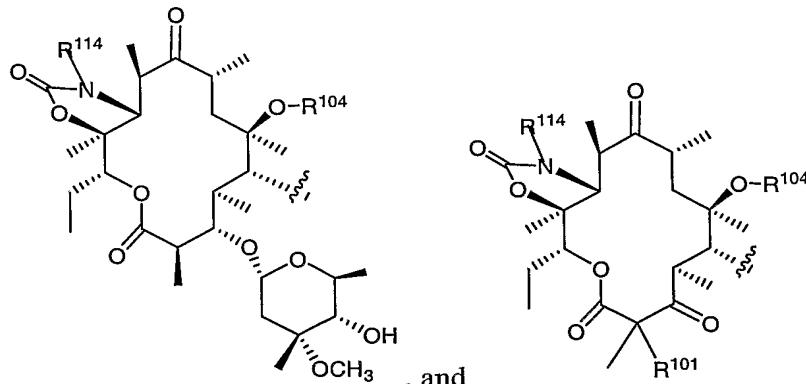
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- 327 -



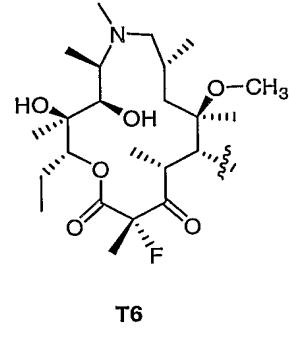
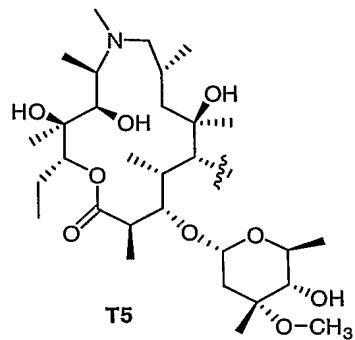
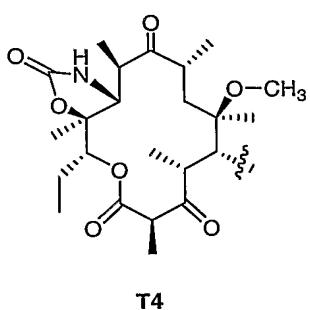
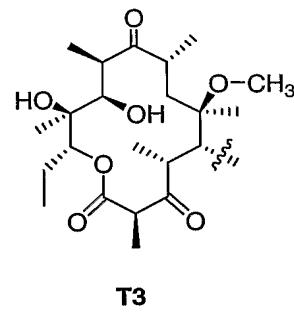
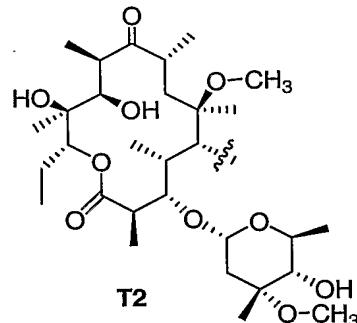
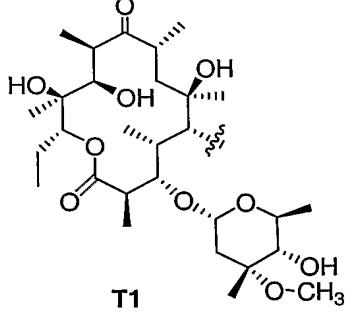
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11 or an *N*-oxide pharmaceutically acceptable salt, ester, or prodrug thereof,
12 wherein M, R¹, R², R¹⁰⁴, R¹¹⁴, R¹⁰⁹ and R¹²⁷ are as described in claim 13.

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17. A compound according to any one of claims 1-16, wherein T is a macrolide
2 selected from the group consisting of T1 through T33:

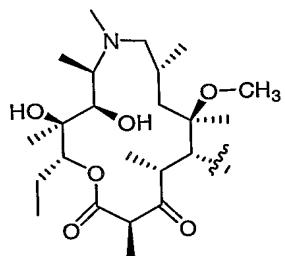
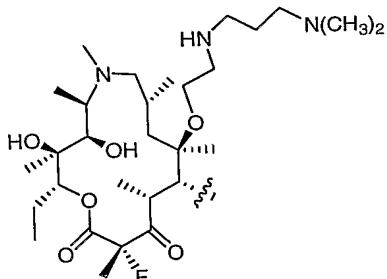
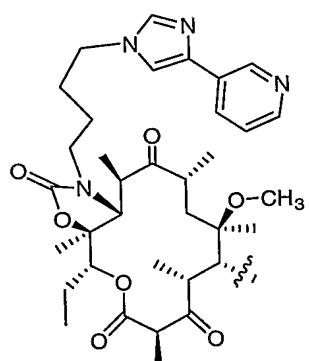
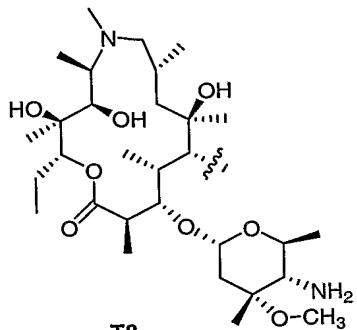


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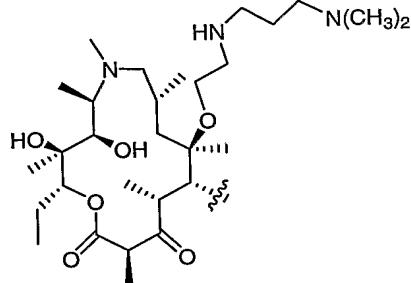
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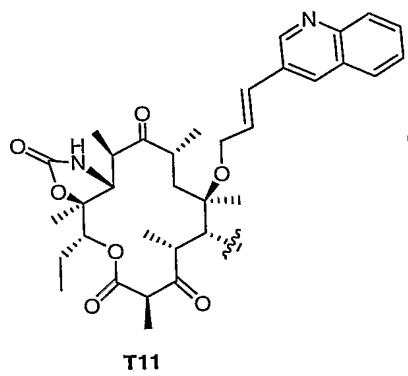
- 328 -

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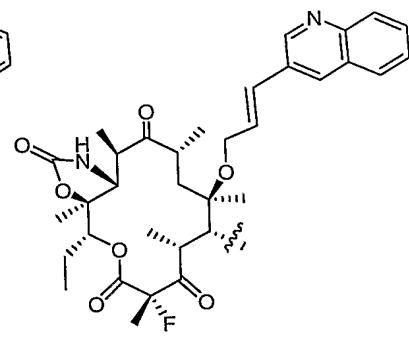
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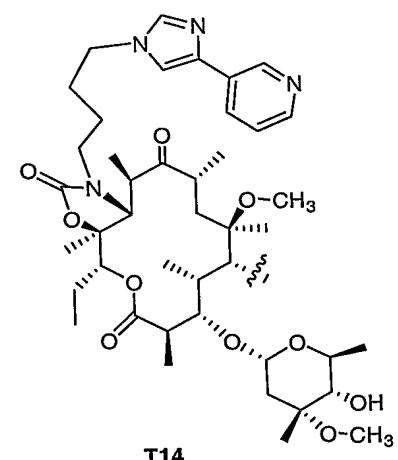
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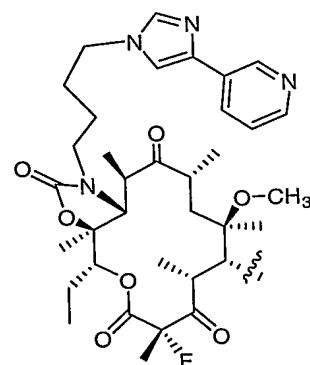
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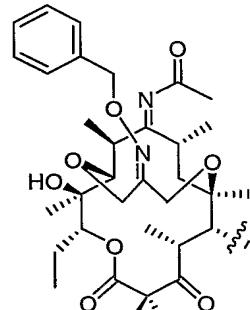
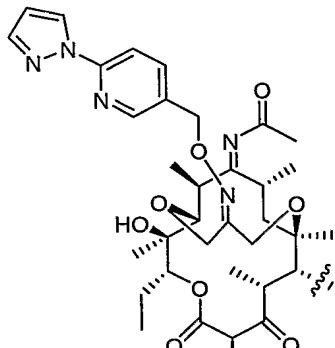
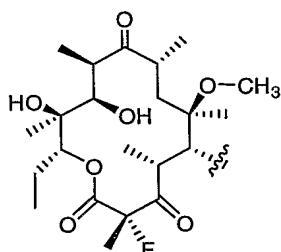
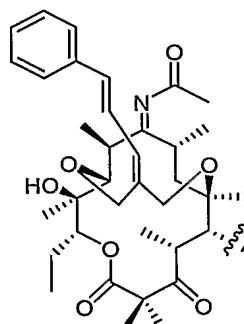
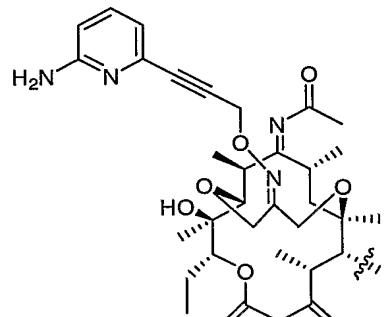
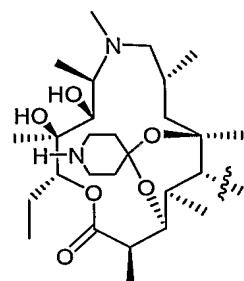
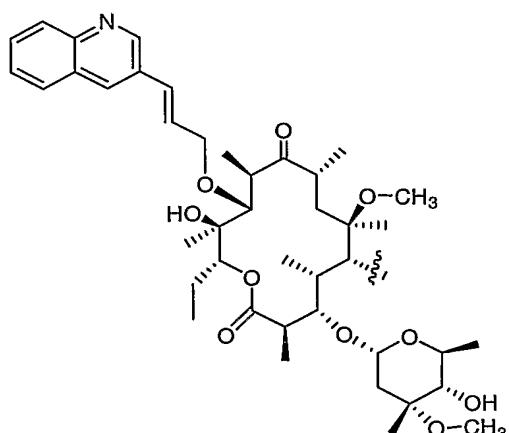


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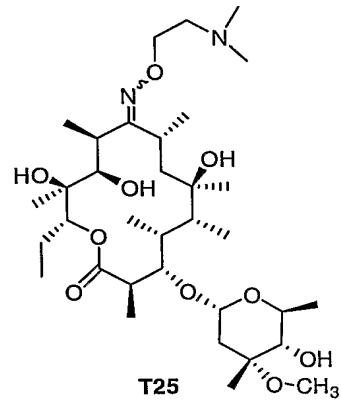
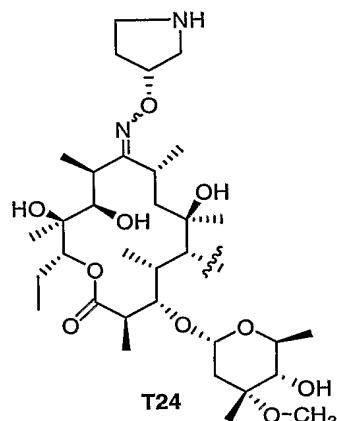
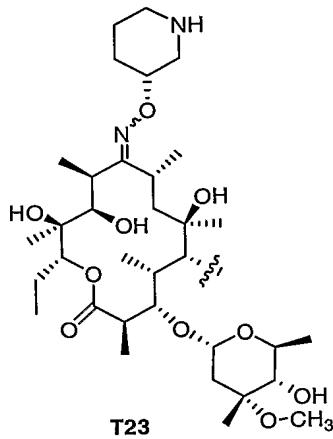


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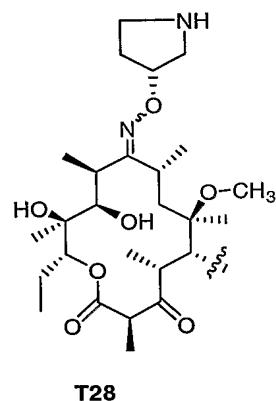
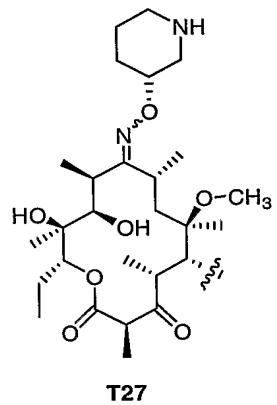
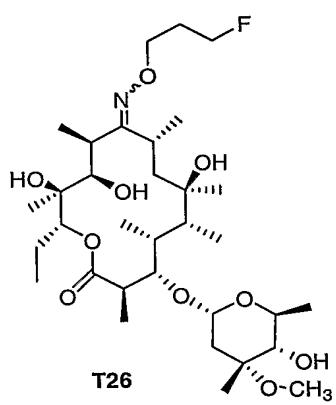
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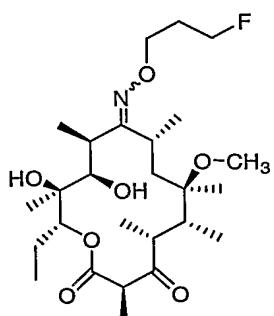
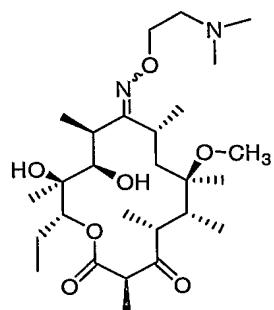


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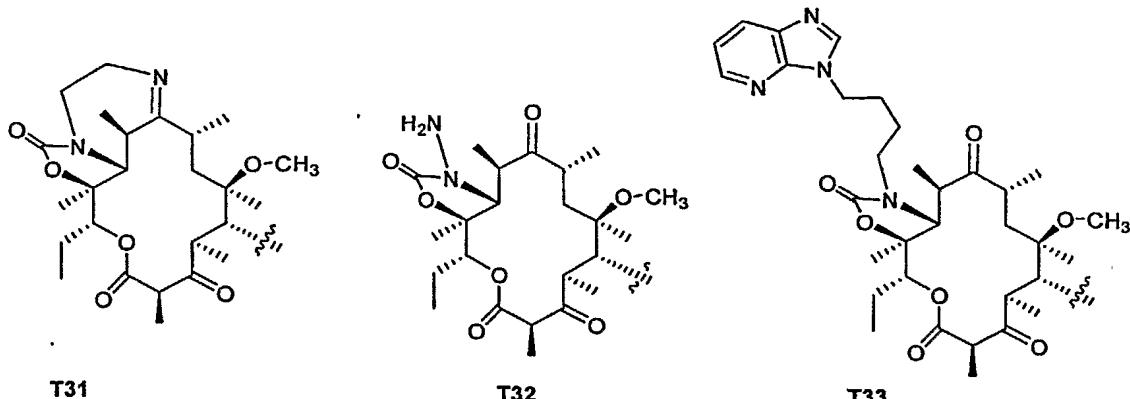
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- 331 -



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1 18. A compound having the structure corresponding to any one of the structures listed
2 in Table 1 or 13, or a pharmaceutically acceptable salt, ester, *N*-oxide, or prodrug thereof.

1 19. A pharmaceutical composition comprising a compound according to any one of
2 claims 1-18 and a pharmaceutically acceptable carrier.

1 20. A method for treating or preventing a disease state in a mammal comprising
2 administering to a mammal in need thereof an effective amount of a compound according to any
3 one of claims 1-18.

1 21. A method of treating a microbial infection in a mammal comprising administering
2 to the mammal an effective amount of a compound according to any one of claims 1-18.

1 22. A method of treating a fungal infection in a mammal comprising administering to
2 the mammal an effective amount of a compound according to any one of claims 1-18.

1 23. A method of treating a parasitic disease in a mammal comprising administering to
2 the mammal an effective amount of a compound according to any one of claims 1-18.

1 24. A method of treating a proliferative disease in a mammal comprising
2 administering to the mammal an effective amount of a compound according to any one of claims
3 1-18.

1 25. A method of treating a viral infection in a mammal comprising administering to
2 the mammal an effective amount of a compound according to any one of claims 1-18.

1 26. A method of treating an inflammatory disease in a mammal comprising
2 administering to the mammal an effective amount of a compound according to any one of claims
3 1-18.

- 332 -

1 27. A method of treating a gastrointestinal motility disorder in a mammal comprising
2 administering to the mammal an effective amount of a compound according to any one of claims
3 . 1-18.

1 28. A method of treating or preventing a disease state in a mammal caused or
2 mediated by a nonsense or missense mutation comprising administering to a mammal in need
3 thereof an effective amount of a compound according to any one of claims 1-18 to suppress
4 expression of the nonsense or missense mutation.

1 29. The method according to any one of claims 20-26 wherein the compound is
2 administered orally, parentally, or topically.

1 30. A method of synthesizing a compound according to any of claims 1-18.

1 31. A medical device containing a compound according to any one of claims 1-18.

1 32. The medical device according to claim 31, wherein the device is a stent.